

F28HS2 Hardware Software Interface

Tutorial 3

A) write functions:

- i) `int max(int a[],int n)`
which returns the index of the largest value in array `a` of length `n`
- ii) `writeMax(char * s,int a[],int n)`
which prints all the elements of array `a` of length `n` on the display followed by the largest value in `a`, commented by string `s` – see below

B) an experiment involves a number of subjects each taking part in a number of trials. It is required to find the subject with the highest trial average and the trial with the highest subject average. Results are recorded in a matrix with a row for each subject and a column for each trial. Using the above functions, write a program which, given a file with the number of subjects, number of trials, and the trial results for each subject:

- i) inputs the number of subjects and trials, constructs an appropriate matrix and inputs the results so say `R[i][j]` is the `i`th subject's `j`th trial result
- ii) sets integer array `avtrial[i]` to the `i`th subject's trial average
- iii) sets integer array `avsubj[j]` to the `j`th trial's subject average
- iv) outputs the results, subject trial averages and maximum subject trial average, and trial subject averages and maximum trial subject average to the display

e.g. file `stats.txt` contains:

```
6 5
1 2 3 4 5
2 4 6 8 10
11 13 15 17 19
1 4 7 10 13
2 5 8 11 14
12 10 8 6 4
```

so there are 6 subjects (rows) each taking part in 5 trials (columns). Then, the output is:

```
1 2 3 4 5
2 4 6 8 10
11 13 15 17 19
1 4 7 10 13
2 5 8 11 14
12 10 8 6 4
3 6 15 7 8 8 - max = Subject[2] = 15
4 6 7 9 10 - max = Trial[4] = 10
```

You should make use of `readMatrix`, `writeMatrix`, `makeMatrix` and `makeVector` from `matrix2.c`.